



Research Paper

## Linear Regression Model for Predicting the Upcoming 2022 U.P. State Legislative Assembly Election

Dr. AS Lamba

*Retired Associate Professor, Deshbandhu College, (University of Delhi)*

Gaurav Gupta

*BA(H) Economics, Deshbandhu College, (University of Delhi)*

Sanyam Sharma

*BA(H) Economics, Deshbandhu College, (University of Delhi)*

Piyush Agrawal

*BA(H) Economics, Deshbandhu College, (University of Delhi)*

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### Abstract

*It is believed that there are several economic & political factors that determine every election results. A lot of econometric literature has been issued on predicting the election results, but specifically not for U.P. State Legislative Assembly Elections. I tested the hypothesis of several economic & political factors in my linear regression model & examined how these variables affect the chances of the incumbent party to win the next Legislative Assembly Elections. I used the secondary data of the explanatory variables of 12 elections to test my hypothesis. I concluded that high inflation rate & unemployment rate during the tenure of the Incumbent party reduces its chances of winning the next election. I also concluded that if the incumbent party holds the chair in the Centre at the time of election, it is highly likely that it would win the next election by majority.*

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### I. INTRODUCTION

There are several economic & other factors that affect the election results. Not much literature has been issued on prediction of UP State Legislative Assembly Elections. I used the work of Daniel Walter, 2015 & Abramowitz, 2008 as the base to write the paper since Uttar Pradesh also has a multi-party system.

Their work included determining the factors that affect all the parties' chances of winning in the multi-party system separately.

In this paper we used a different approach by considering the several factors that affect the chances of winning of the incumbent party in the UP state legislative assembly election rather than considering all the parties separately.

In this literature, I considered several economic factors, that is; the inflation rate & the unemployment rate coupled with some of the political factors that affect the election results like whether the same party is holding the office in the Centre, the number of seats held by the incumbent party in the Upper House of the Parliament.

The next section includes background which presents some of the work done in this area, followed by methodology in which we derived the linear regression model considering five factors that can influence the election results. We used SPSS software to estimate the coefficients of the regression model. This is followed by results in which tested the hypothesis formed in the model which is followed by Conclusion in which I predicted the upcoming 2022 U.P. State Legislative Assembly Election Results

## II. BACKGROUND

The most well-known work in the area of prediction in multi-party system is by Daniel Walter in which he studied the factors that affect all the parties in the multi-party election system separately. The factors include the political and the economic ones. He adopted the Bayesian approach in his paper.

Abramowitz also adopted a similar approach in his paper in which he showed that the structured models are difficult to apply in the multi-party election system and he used the polling data as the base of his research work. His research work considered the share of the votes won by the incumbent Party as a dependent variable. He found that the economic conditions are the most important factors that determine election results.

## III. METHODOLOGY

We hypothesize that the economic variables like unemployment rate and the inflation rate affect the election results. Public cast their vote for the existing party if the economic conditions are in favor and do not cast their vote for the existing party if the economic conditions are not in favor during his/her tenure.

Election results are also impacted by some of the political factors like whether the incumbent party is holding the chair in the central government. If there is the same party in the Central-Government, the result would be more favorable for the incumbent party. General public usually takes the high inflation rate as weakening of the economy and flaw of the Government. If the inflation rate is maintained within the target in the state during the tenure of the incumbent party, it would be favorable for the party in the next election. If the unemployment rate is high during the tenure of the incumbent party, public would vote against it and if it is maintained low, it would be favorable for the incumbent party.

We also hypothesized that the percentage of the seats held by the incumbent party during the election in the Rajya Sabha is also a factor that affect the election results. If the incumbent party holds a large proportion of the seats in the Rajya Sabha means that the party has power in the whole country which means that the party is doing well in other states also. Hold on the Rajya Sabha seats would mean that the bills passed in the Parliament would be in lieu of the goals of the incumbent party.

We also hypothesized that whether the incumbent party holds the chair in the Centre is also an important factor that affect the election results. If there is the same party in the State as well as in the Centre, it would be favorable for the Incumbent in the upcoming election. History of the tenures of the incumbent party also plays a role in the election. If the incumbent party is holding the office for the long time simply means that there is a good reputation of the party and the party is doing well for the long time. This also increases the chances of winning of the incumbent party in the next election.

We took the percentage of the seats that the incumbent party will win in the next election as the dependent variable for my linear regression model. If the expected percentage is more than 50 percent, we can conclude that it is highly likely that the incumbent party will win the next election by the majority of seats.

### *Data*

We took the data of last 12 elections starting from 1969. In 1969 Legislative Assembly Election, the incumbent party was Indian National Congress. I took the inflation rate as the average annual percentage of the tenure of the party. Unemployment rate is taken as the average of the period in which the party holds the office. Both of these explanatory variables are numerical in nature. Data include only those elections in which the incumbent party is not the coalition one. I have taken the secondary data for all five explanatory variables. History of the tenure is treated as a dummy variable which takes the value of 1 if the incumbent party has won any one of the last two elections and zero if it has not won any of the last 2 elections.

Government in the Centre is also a Dummy Variable which takes the value of 1 if the Central Government and the incumbent party are the same at the time of election, otherwise, it is assigned a value of zero if the incumbent party and the party at the Centre is different. I took the data for the explained/dependent variable as the percentage of the total seats (403) that the incumbent party won in the Next election held.

### *Linear Regression Model*

$PerSeats_i = B_1 + B_2 * Infl + B_3 * Unmp + B_4 * Centre + B_5 * RajyaSb + B_6 * Histen + u_i$  is the population regression function, where

*PerSeats* represents the percentage of the seats won by the incumbent party in the next election held.

*Infl* represents Inflation Rate.

*Unmp* represents Unemployment Rate.

*Centre* represents the Dummy Variable whether the Incumbent party is in the Centre.

*RajyaSb* represents the percentage of the seats held by the Incumbent party in the Rajya Sabha.

*Histen* represents the Dummy Variable of whether the Incumbent party has won any of the elections in the preceding two.

*ui* represents the error term.

$PerSeats_i = b_1 + b_2 * Infl + b_3 * Unmp + b_4 * Centre + b_5 * RajyaSb + b_6 * Histen + e_i$  is the sample regression function.

I used SPSS to run the regression and estimate the coefficients.

#### IV. RESULTS

$PerSeats_i = 5.080 - 2.986 * Infl - 0.549 * Unmp + 33.374 * Centre + 0.085 * RajyaSb + 0.283 * Histen + e_i$   
 Ordinary Least Square method has been used to estimate the regression coefficients. The estimated value of the coefficient of *Infl* variable is -2.986, which is intuitive in the sense that the high inflation rate during the tenure of the incumbent party decreases the chances of the party of winning the next election & low inflation rate during the tenure of the incumbent party is favorable for the party in the next election.

The estimated value of the coefficient of *Unmp* variable is -0.549, which is intuitive in the sense that the high Unemployment rate during the tenure of the incumbent party decreases the chances of the party of winning the next election as high unemployment rate simply represents a poor economic condition & low Unemployment rate during the tenure of the incumbent party is favorable for the party in the next election as it represents good economic condition of the State.

The estimated value of the coefficient of *Centre* variable is 33.374, which is different from zero at any reasonable significance level. It is intuitive in the sense that if the incumbent party holds the chair in the Centre means that the party is having power in the Parliament, and therefore, any decision taken in the Parliament would be in lieu of the goals and objectives of the State Government. If the party is in the Centre, it also means that it is doing well in the whole country, and this would have a favorable impact on the party in the next election.

The estimated value of the coefficient of *RajyaSb* variable is 0.085, which is not different from zero at reasonable significance level. The positive sign is intuitive in the sense that if the incumbent party is holding a large proportion of the seats means that the party is having power in the Parliament, and therefore, any decision taken in the Parliament would be in lieu of the goals and objectives of the State Government, as any bill passed in the Parliament needs the approval of Rajya Sabha. If the incumbent party is holding a small proportion of the seats means that the party is not having enough power in the Parliament, and therefore, any decision taken in the Parliament may or may not be in lieu of the goals and objectives of the State Government.

The positive coefficient of *Histen* variable is also intuitive in the sense that if the party is holding the office for the long time means that it has done well in the past, which in turn increases its chances of winning the next election. As R square is 68.5%, it means that the five explanatory variables taken in the model together explains 68.5% of the variation in the dependent variable or these five variables explain the dependent variable with 68.5% accuracy.

#### V. CONCLUSION

The most significant variable that affect the chances of the incumbent party to win the next State Legislative Assembly election in Uttar Pradesh is whether the Incumbent party holds the office in the Centre. We have found that the Economic factors are not much significant as their coefficients are not different from zero at reasonable significant level in my linear regression model. There is a lot of scope of further improvement of the model by considering other factors also that might affect the election results. *Prediction*

After feeding the data of the explanatory variables in my Sample Regression Model, I found that the expected percentage of the seats that the party currently holding office in U.P., this is, B.J.P. will win in the upcoming 2022 State Legislative Assembly Election is 63.42%. Therefore, I predict that it is highly likely that B.J.P. will win the upcoming 2022 State Legislative Assembly Election with complete majority.

#### Appendix

**Table 1-**

*Descriptive Statistics*

Description Of Explained & Explanatory Variables		Mean	Std. Deviation	N
PerSeats	Percentage of the seats won by the incumbent party in the next election held	32.125	18.90114	12
	Dummy variable depicting whether			

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Centre	the Incumbent party is holding the chair in the Centre	0.33	0.492	12
RajyaSb	Percentage of the seats held by the Incumbent party in Rajya Sabha at the time of next election	25.625	20.58367	12
Histen	Dummy variable depicting whether the party won any of the preceding two elections	0.58	0.515	12
Unmp	Average annual unemployment rate during the tenure of the Incumbent Party	5.8383	1.65706	12
Infl	Average annual Inflation rate during the tenure of the Incumbent Party	7.2975	3.03508	12

**Table 2-**  
*Coefficients of Explained & Explanatory Variables*

Estimated Coefficients	Standard Errors	T Statistic
(Constant)	5.080	16.522
Centre	33.374	15.824
RajyaSb	.085	.336
Histen	0.283	14.517
Unmp	-.549	4.030
Infl	-2.986	1.831

a. Dependent Variable: PerSeats

**Table 3 -**  
*Summary Of The Model*

Coefficient Of Determination	Standard Error Of Explained Variable
.685	14.37180

a. Predictors: (Constant), Infl, Centre, RajyaSb, Unmp, Histen

b. Explained Variable: PerSeats

**Table 4 -**  
*Analysis Of Variance Table*

	Degree Of Freedom	Square Of Mean	F Statistic
Explained Sum Of Squares	2690.490	5	538.0982.605
Residual Sum Of Squares	1239.292	6	206.549
Total	3929.782	11	

a. Explained Variable: PerSeats

b. Explanatory Variables: (Constant), Infl, Centre, RajyaSb, Unmp, Histen

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